2007 Integrated Energy Policy Report
Committee Final

FINAL ERRATA
December 5, 2007

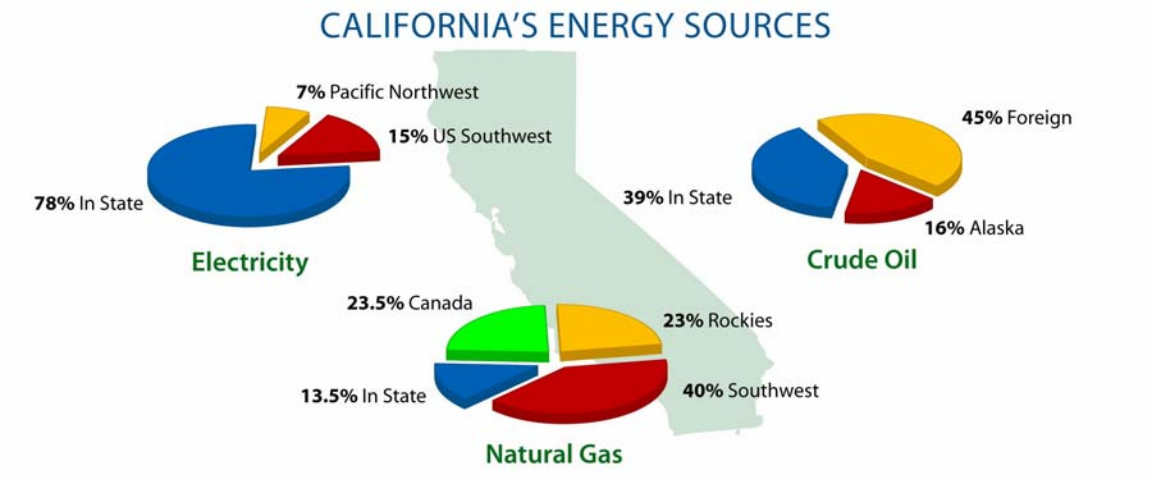
Chapter 1

Page 8, paragraph 2: As the ~~second~~ *third* largest consumer of gasoline in the world (behind ~~only~~ the United States as a whole *and China*)— ~~more than~~ *almost* 16 billion gallons of gasoline and 4 billion gallons of diesel each year—California would like to replicate its success with electricity efficiency in transportation fuels.

Page 12, paragraph 2: The state produces about 13.5 percent of the natural gas it uses, ~~37~~ *39* percent of the ~~petroleum~~ *crude oil* and over three quarters of the electricity.

Page 13: Replace existing Figure 1-7 with new figure correctly reflecting California's 2006 Natural Gas and Crude Oil receipts.

Figure 1-7: California's Big Picture



Page 18, paragraph 5: Today, foreign imports – primarily from Saudi Arabia, Ecuador, Iraq and Mexico – contribute ~~almost 42~~ *over 45* percent of crude oil supplies and Alaska imports have ~~declined~~ *dropped* to ~~21~~ *16* percent as the North Slope oil field production declines.

Page 18, paragraph 6: With *over* 60 percent of the oil used by California-based refineries and 10 percent of the refined petroleum products coming from outside of the state, marine facilities are a vital part of the state's petroleum infrastructure.

Page 19, paragraph 5: There is some good news. While national demand grew by 1.5 percent in the first half of 2007, according to the American Petroleum Institute, consumption in California actually dropped. Californians used ~~nearly 1 percent less gasoline in April 2007—10 million fewer gallons of gasoline than the previous April—according to the California Board of Equalization. This was the fourth straight quarter in which Californians have used less gasoline than they did during the same period the year before.~~ *over 63 million gallons of gasoline less from January through August 2007 than during the same period in 2006.* (footnote: California Board of Equalization, Net Taxable Gasoline Gallons, 2000-Present.) Despite these recent statistics, demand for gasoline and diesel is expected to increase in California by 1 to 2 percent each year as a growing population registers more vehicles and drives more miles.

Chapter 2

Page 40-41: Correct last sentence in the second paragraph under the "Cost of Generation" section to read:

Because of the increasing role that newer technologies—especially in the renewables sector—are likely to play in California's future generation mix, the Energy Commission commits to using the 2009 IEPR cycle to extensively refine the input data used for developing technologies and to establish a process, working with industry and academic experts, to ~~include~~ regularly update changing ~~of~~ technology costs over time.

Page 48: Replace the incorrect 1990 value of 92.7 million metric tons in Figure 2-17 with correct 1990 value of 93.6 million metric tons.

Page 68, paragraph 3: Although ~~13~~ *18* plants, totaling 8,361 megawatts, have been approved, they have not moved forward with construction *largely* because they lack power purchase agreements necessary for their financing. *Seven of these plants have actually been cancelled or had their permits expire.*

Page 70, paragraph 3: The report concludes that, while technical challenges to CO2 capture and sequestration remain, the primary barriers to progressing with initial projects are economic—with costs for CO2 capture and compression*, which are believed to make up 70-80 percent of total costs,* estimated at $50-~~$90~~ *to $100* per metric ton—and more generally, statutory and regulatory.

Page 71, paragraph 4: delete …"$50 to ~~$90~~" and insert "*$100*"…

Page 71, replace last paragraph with: *However, according to the Intergovernmental Panel on Climate Change, carbon prices could be about $100 per ton by 2030 for the 445-490 parts per million CO_2 equivalent stabilization levels that the IPCC has identified as needed to reduce global emissions 50 to 85 percent*[1] *(footnote: The Intergovernmental Panel on Climate Change reports a 445-490 parts per million CO_2 equivalent as substantially reducing the expected magnitude, impact, and rate of climate change from business as usual scenarios by 2050 from 2000 emissions level, and states that most individual studies for this category of reductions cluster around $100 per ton CO2 by 2030. IPCC, 2007. Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Metz, B., O. R. Davidson, P. R. Bosch, R. Dave, and L. A. Meyer (eds). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-chapter3.pdf, p. 198, Table 3.5, and p. 206.)*

Page 82, Recommendations section: Replace entire recommendations section with the following:

To address issues identified as part of the Energy Commission's analyses of the electric sector and to better address costs and risks in the utility planning process, the Energy Commission makes the following recommendations:

- *As an early part of the 2008 IEPR Update, the Energy Commission will conduct a public process that includes CPUC staff, utilities, and other stakeholders to determine an effective method of better delineating the energy efficiency savings assumptions included in the Energy Commission staff demand forecast, both from historic as well as future standards and programs. The Energy Commission recognizes the value that such a methodology can provide in future state planning efforts related to both energy policy and greenhouse gas emissions reduction.*

- *The Energy Commission will use the 2009 IEPR cycle to extensively refine the input data used for developing technologies in the Cost of Generation Model, and to establish a process to regularly update changing technology costs over time.*
- *The Energy Commission will include in the 2009 IEPR a robust assessment of the effect of high levels of preferred resources on reducing natural gas prices.*
- *The Energy Commission will make the development of a common portfolio analytic methodology a core focus of the 2008 IEPR Update, with the clear objective of influencing the long-term procurement plans filed by the investor-owned utilities with the CPUC in December, 2008. This methodology should use common assumptions across utilities to the maximum extent practicable; extend over a 20 – 30 year period of analysis; discount future fuel costs at the same social discount rate used in standard-setting activities unless these costs are shown to be shareholder liabilities; and focus upon an "efficient frontier" from a consumer perspective utilizing a cost-based metric, with a sufficiently broad scope to incorporate environmental impacts.*
- *The Energy Commission will actively participate in the California ISO's study concerning aging power plants that use once-through cooling, with specific attention given to the challenges faced by the investor-owned and the publicly owned utilities in Southern California.*
- *As originally articulated in the 2005 IEPR, the CPUC should require that investor-owned utilities procure enough capacity from long-term contracts to allow for the orderly retirement or repowering of aging plants by 2012.*
- *To ensure that California's interests are protected, the state should take an active role in the Yucca Mountain licensing proceeding and challenge DOE's inadequate response to potential impacts previously identified during the Environmental Impact Statement and review process. The Energy Commission will continue to participate in DOE and regional planning activities for nuclear waste shipments, as well as assess the reliability implications for California's operating nuclear plants from implementation of once-through cooling regulations.*
- *The Energy Commission will work with federal and state regulators, nuclear plant owners, and Institute of Nuclear Power Operators (INPO) to develop a means to usefully incorporate INPO reviews and ratings of reactor operations into a meaningful public process while maintaining the value of the INPO reviews as confidential and candid assessments.*
- *Southern California Edison should, as part of its long-term procurement plans, develop a contingency plan to replace generation from Palo Verde should it be shut down for an extended period.*

Chapter 3

No substantive changes required.

Chapter 4

Page 136, footnote 131: Correct footnote to read:
Renewable Energy Transmission Initiative Mission Statement, ~~July 11, 2007~~ *September 17, 2007*, *http://www.energy.ca.gov/reti/MISSION_STATEMENT.PDF* ~~http://www.ceert.org/ceert_reports/CRETI%20Mission%20-%20final.pdf, accessed July 24, 2007~~

Page 132, footnote 117: Replace footnote with following reference: *Carrie A. Downey, November 9, 2007, "Phase 1 Opening Brief of Imperial Irrigation District," In the matter of the application of SDG&E Company for a CPCN for the Sunrise Powerlink Transmission Project, Application No. 06-08-010, pp. 15-22.*

Pages 191 to 193, Recommendations Section: To clarify renewable resource related recommendations, replace all bulleted recommendations with the following:

- *The Energy Commission should leverage its power plant licensing and transmission corridor designation authority, its environmental expertise, and its transmission planning and policy experience to help guide renewable resource development in California.*
- *The Energy Commission should establish a more cohesive statewide approach for renewable development that identifies preferred renewable generation and transmission projects in a "road map" for renewables.*
- *The CPUC should immediately implement a feed-in tariff, set initially at the market price referent, for all RPS-eligible renewables up to 20 MW in size.*
- *The Energy Commission should begin a collaborative process with the CPUC to develop feed-in tariffs for larger projects. Such tariffs should incorporate the value of a diverse mix of renewables as well as features of the most successful European feed-in tariffs.*
- *The CPUC should update how the market price referent is calculated to more fully reflect the risk of gas price volatility, the market costs of long-term fixed-price power, and appropriate greenhouse gas adders.*
- *Greenhouse gas reductions from the RPS should be quantified and taken out of any allowance system for cap-and-trade purposes to avoid excess supply of tradable greenhouse gas emission reduction credits.*

- *Existing wind sites should be repowered and expanded to increase the efficient use of existing infrastructure and reduce environmental impacts.*
- *The Energy Commission and the CPUC should work together to establish an appropriate feed-in tariff for excess generation from customer-owned solar installations based upon the RPS market price referent and time-of-delivery adjustment.*

Chapter 5

No substantive changes required.

Chapter 6

Page 213, first paragraph: In the late 1970s *and early 1980s* for air quality and cost benefits, California moved away from petroleum, ~~nuclear and out-of-state coal~~ to natural gas for generating electricity.

Page 213, paragraph 3: Natural gas is the primary ~~and most efficient~~ fuel for residential cooking, space and water heating and industrial processes.

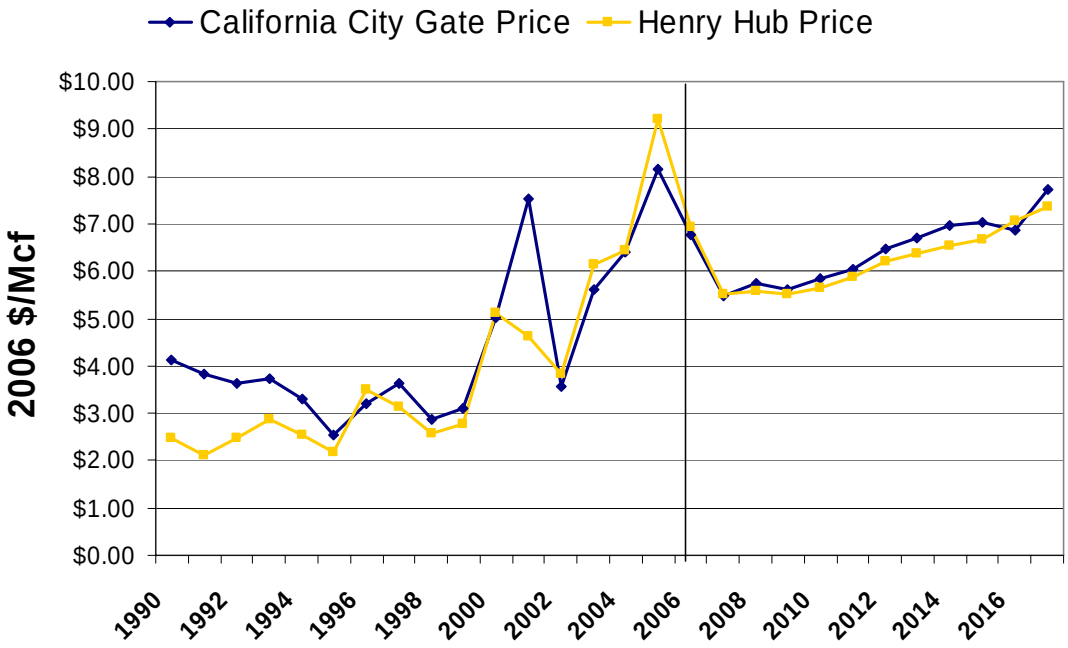
Page 215, paragraph 2: Delete "to generate electricity" from the second sentence.

Page 215, paragraph 3: While California's average wholesale natural gas price is lower than in some regions of the United States, it has increased appreciably from ~~$3.82 (2006 dollars)~~ $3.20 per thousand cubic feet in 2002 to ~~$6.68 per million~~ $6.76 per thousand cubic feet in 2006.

Page 216, top of the page: As discussed in Chapters 2 and *4* ~~5~~, however, the high price volatility for natural gas and the ability of electric utilities to be financially ~~insensitive to fuel cost~~ *insulated from fuel cost variability due to regulatory* pass-through, has made California's increasing reliance on gas-fired electric generation problematic from a ratepayer perspective.

Page 232: Replace existing Figure 6-13 with new figure correctly reflecting increases in California's wholesale natural gas prices

Figure 6-13: Wholesale Natural Gas Prices – California Compared with Henry Hub (National)



Page 235, paragraph 2: Because these facilities take too long to ramp up to provide electricity when needed, they are idled during the low demand *hours,* ~~season~~. burning natural gas and emitting greenhouse gas emissions but producing no electricity.

Page 235, paragraph 3: These ~~combined heat and power~~ facilities can be particularly efficient when a heat recovery steam generator *used* to power a conventional steam turbine in a combined cycle configuration captures waste heat from the gas turbine. ~~They can also be~~ *Other designs are* run in a cogeneration configuration: the exhaust *heat* is used for space or water heating, or drives an absorption chiller for cooling or refrigeration. This type of cogeneration configuration can be over 90 percent efficient.

Page 236, top of page: … "less efficient natural gas power plants and replace or repower them with new, more efficient ~~combined heat and power facilities~~ *power plants*.

Page 236, last paragraph: This conclusion could help drive public policy to choose preferred resources over ~~other~~ conventional fuels. Staff's analysis looked at two ~~models~~ *scenarios* from the Scenario Analysis Project; Case 1*B* using just enough efficiency and renewables to meet the *energy efficiency and*

RPS goals and Case 5B using high levels of efficiency and renewable energy in the WECC electricity resource mix.

Page 236, footnote 262: Move footnote to page 237 at the end of the first complete paragraph.

Page 238, third bullet: The Energy Commission encourages renewable sources of energy to generate electricity, as well as sources—such as solar for water and space hearing—that directly displace natural gas. *Pipeline-quality biogas injected into California's natural gas pipeline system should be compensated for through a feed-in tariff mechanism paid by the gas utilities. The Energy Commission and Public Utilities Commission should work together to establish an appropriate price per therm to be paid for pipeline-quality biogas along the lines of the market price referent used in the RPS program.*

Chapter 7

No substantive changes required.

Chapter 8

Page 262, paragraph 3: The *Energy Commission* ~~California Department of Transportation (Caltrans)~~ estimates that VMT will continue to grow at nearly ~~3~~ 2 percent annually into the foreseeable future.

Pages 274-276: replace "The Legislature should" with "The state should."